

Notice of Allowability

Application No.

10/527,448

Examiner

Leo Boutsikaris

Applicant(s)

TAKEMORI ET AL.

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed on 3/11/05.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

LEONIDAS BOUTSIKARIS
PRIMARY EXAMINER

Leo Boutsikaris, Ph.D., Esq.
Primary Patent Examiner, AU 2872
1/18/07

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Allowable Subject Matter

Claims 1-20 are allowed.

Claims 1-20 are allowable over the prior art of record for at least the reason that even though the prior art discloses 3D display systems where a spatial light modulator having a sequence of holographic patterns is illuminated by a sequence of color light beams, with the resulting beams being displayed at a projection screen, or 3D display systems where a spatial light modulator having a holographic pattern is illuminated by appropriate reconstruction light, with the resulting diffracted light beams being spatially filtered by a mask having an aperture, the prior art fails to teach or reasonably suggest, regarding claims 1-10, a 3D image display apparatus for making illumination light components of multiple wavelengths incident to a hologram, wherein the illumination optical system sets the incident directions of the respective illumination light components of the wavelengths to the spatial light modulator so that diffracted waves of any order of the respective reproduced light components of the wavelengths are superimposed on each other in the aperture of the mask after the wavefront transformation by the reproduced image transforming optical system, and regarding claims 11-20, a 3D image display

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method of making illumination light components of multiple wavelengths incident to a hologram comprising the step of letting the illumination optical system set the incident directions of the respective illumination light components of the wavelengths to the spatial light modulator so that diffracted waves of any order of the respective reproduced light components of the wavelengths are superimposed on each other in the aperture of the mask after the wavefront transformation by the reproduced image transforming optical system, as set forth by the claimed combination.

Popovich (US 6,317,228, Fig. 22) discloses a holographic illumination display system, where a sequence of color light beams R, G, B illuminates an SLM sequentially displaying images corresponding to the incident color beams. Light reflected from the display device is coupled to a projection system (line 61, col. 23 to line 12, col. 24).

Mishina (JP 2000-250387, Fig. 4) discloses a 3D display device where reproduction light 5 is incident on an SLM 2 having a holographic pattern, and the resulting diffracted light is imaged by lens 3 and spatially filtered by a mask having aperture 4, so that only light of first diffraction order is transmitted therethrough (see Abstract). Furthermore, in the above system, the filtering action is achieved by proper choice of the pixel pitch of the SLM ([0024]).

Yano (US 4,067,638, Fig. 2) discloses a 3D multi-color display system where color reproduction light beams 12₁, 12₂, 12₃ illuminate a hologram 11, with the diffracted light being spatially filtered by mask having aperture 16, in order to prevent cross-talk noise (lines 63-68, col. 2).


Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308. The examiner can normally be reached on M-F, 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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January 17, 2007 

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